



In the United States Patent and Trademark Office
Board of Patent Appeals and Interferences

Appeal Brief

In re the Application of:

Paul Lawrence Bradshaw, Brian Augustine Declaire, Daniel Graham Douglas, Douglas
Paul Dunham, Tina Lynn Dunton, David Wilson Groves, Vincent Jomartin Hoang,
Nancy Lott Hobbs, His Tai Hsu, Louis Leo Lorber, Ngoc V. Nguyen,
Gregory John Tevis, and Ophelia K. Yip

Serial No. 09/972,207
Filed: October 5, 2001
Attorney Docket No. SJO920010097US1

STORAGE AREA NETWORK METHODS AND APPARATUS WITH
HIERARCHICAL FILE SYSTEM EXTENSION POLICY

Submitted by:

Konrad, Raynes & Victor LLP
315 So. Beverly Dr., Ste. 210
Beverly Hills CA 90212
(310) 556-7983
(310) 556-7984 (fax)

02/24/2006 CCHAU1 00000128 090466 09972207
02 FC:1402 500.00 DA

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I. Real Party in Interest

The entire right, title and interest in this patent application is assigned to real party in interest International Business Machines Corporation.

II. Related Appeals, Interferences, and Judicial Proceedings

Appellant, Appellant's legal representative, and Assignee are not aware of any other prior or pending appeals, interferences, and judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of the Claims

Claims 1-4, 6, 16, and 18-34 are pending and have been rejected in view of prior art. The final rejection of the claims is being appealed for all pending claims 1-4, 6, 16, and 18-34.

Claim 33 is objected to as dependent on itself. This claim should depend from claim 32. Applicants submit that claim 33 may be amended to correct the dependency by the Examiner if the Examiner finds the claims allowable, see, Manual of Patent Examination and Procedure (MPEP) Sec. 1206, pgs. 22-23 (Aug. 2005, Rev. 3), or in the event the prior art rejections are overturned by the Board.

IV. Status of Amendments

An amendment to the claims was filed on February 17, 2005 in response to a first non-final office action dated November 17, which the Examiner entered. No amendment

to the claims was made after receipt of the final office action dated June 15, 2005 ("Final Office Action"), which is being appealed.

V. Summary of the Claimed Subject Matter

Independent claims 1, 16, and 29 concern a plurality of storage devices and a plurality of digital data processors, each having a file system that effects access to one or more of the storage devices. Claims 1 and 16 recite that these components are in a SAN. FIG. 1 and pgs. 51-53 of the Specification disclose the SAN having storage devices and hosts, i.e., digital data processors with file systems. Claim 1 further requires a process in communication with the digital data processors, wherein the process responds to a notification from one of the digital data processors requesting extension of the file system at the requesting digital data processor in accordance with a hierarchically defined file extension policy. With respect to this limitation, the Specification discloses that the manager 20 (FIG. 1) responds to a file system extension request from an agent. (pgs. 127-128) and a hierarchically defined extension policy (FIG. 33, pgs. 130-131).

Claims 1, 16, and 29 further require a hierarchically defined extension policy indicating a hierarchical arrangement of groups of attributes for configuring the extension of the file system. FIG. 33 and pgs. 130-132 of the Specification disclose a hierarchically defined extension policy 240. These claims further recite adding storage to extend the file system of the requesting digital processor to implement the request for the extension of the file system according to the attributes in the at least one group of attributes associated with the requesting digital data processor. The Specification discloses that a file system extension policy is associated with each host (pg. 128) and that storage is

added to implement the request for the extension according to the attributes (FIG. 27, pgs. 127-128).

Claims 16 and 29 further recite assigning digital data processors to the groups of attributes. The Specification discloses at pgs. 128-129 that each host is associated with a set of attributes defining a policy for file system extension.

VI. Grounds of Rejection to Be Reviewed on Appeal

A concise statement listing each ground of rejection presented for review is as follows:

A. Whether claims 1-4, 6, 16, and 18-34 are unpatentable as anticipated (35 U.S.C. §102(b)) by Lagueux (U.S. Patent No. 6,538,669).

VII. Argument

A. Rejection Under 35 U.S.C. §102(b) Over Lagueux (U.S. Patent No. 6,538,669)

1. Claims 1, 6, 16, and 29

Claim 1 recites a storage area network (SAN), comprising a plurality of storage devices; a plurality of digital data processors, each having a file system that effects access to one or more of the storage devices coupled to the SAN; and a process in communication with the digital data processors, wherein the process responds to a notification from one of the digital data processors requesting extension of the file system at the requesting digital data processor in accordance with a hierarchically defined file extension policy, wherein the hierarchically defined extension policy indicates a hierarchical arrangement of groups of attributes for configuring the extension of the file

system, and wherein the process adds storage to the file system of the requesting digital processor to implement the request for the extension of the file system according to the attributes in the at least one group of attributes associated with the requesting digital data processor.

The Examiner cited col. 5, lines 20-21 of Lagueux as disclosing the claim requirement of the process responding to a notification on behalf of at least a selected one of the digital data processors for extension of the file system in accordance with a hierarchically defined file extension policy. (Final Office Action, pg. 2) Applicants traverse.

The cited col. 5 mentions that a SAN can be used to provide storage services. Nowhere does this cited col. 5 anywhere disclose or mention extending a file system in a SAN with a hierarchically defined file extension policy as claimed.

The Examiner further cited col. 7, lines 50-52. (Final Office Action, pgs. 3-4) The cited col. 7 discusses a LUN that specifies a subcomponent of a target ID, where two devices in an enclosure might share an IDs, but have different LUNs. Nowhere does this cited col. 7 anywhere disclose or mention the claim requirement of extending a file system in a SAN with a hierarchically defined file extension policy. Instead, the cited col. 7 discusses how devices might share a target ID, but have different LUNs.

The Examiner then proceeds on pages 3-4 of the Final Office Action to discuss what he believes to be inherent features of Lagueux, such as a file system, the use of different types of storage, each medium employing its own set of possible file systems, etc. The Examiner further mentions the nodes of Lagueux must have processors and that the storage units must each possess a processor.

Even if nodes have processors and storage devices may be configured with different file systems, nowhere in the Examiner's discussion of "inherent" aspects of Lagueux or in the cited Lagueux is there any disclosure or mention of the claim requirements of extending a file system in a SAN to add storage using a hierarchically defined file extension policy of hierarchically arranged groups of attributes.

The Examiner cited col. 24, line 12 of Lagueux for hierarchically distributed storage elements. (Final Office Action, pg. 4) The cited col. 24 mentions that storage elements are defined using a tree structure. This cited tree view of storage devices in FIG. 22 is defined as "mirror to stripes to disks" to allow the user to build-up storage in an organized manner. Further, the hierarchical tree shown in FIG. 22 of Lagueux is a hierarchical display of components of a storage system, such as the storage devices in different pools and stripes. The hierarchical display indicates storage elements available for configuration. (Lagueux, col. 2, line 61 to col. 3, line 11) The cited hierarchical display of storage devices in Lagueux is different from and does not disclose the claimed hierarchical arrangement of groups of attributes used for configuring the extension of the file system, where the attributes in one group are associated with the requesting digital processor. Applicants submit a hierarchical tree view display of devices available for configuration is different from a hierarchical arrangement of groups of attributes used to add storage to the file system to provide a hierarchically defined extension policy. Nowhere is there any disclosure of the claim requirement of adding storage to a file system in a SAN according to the attributes in a hierarchical arrangement of groups of attributes.

The Examiner further cited col. 21, line 60 to col. 22, line 20 of Lagueux. (Final Office Action, pg. 4) as teaching the claim requirements. Applicants traverse.

The cited cols. 21-22 mention a single intelligent coordination point for configuration of server access to storage, and that little or no hardware reconfiguration is necessary for adding new devices. The configuration allows automatic maintenance of the mapping of data sets in physical storage. The cited cols. 21-22 further discuss various storage management operations.

Applicants submit that the cited cols. 21-22 do not disclose or mention the claimed hierarchically defined file extension policy of a hierarchical arrangement of groups of attributes for configuring the extension of the file system. Further, nowhere is there disclosure of the claim requirement that storage is added for a request for the extension of the file system according to the attributes in the at least one group of attributes associated with the requesting digital data processor. Instead, the cited cols. 21-22 discusses a single coordination point for the configuration of access to storage. The cited storage configuration of Lagueux does not disclose the use of a hierarchically defined file extension policy as claimed having a hierarchical arrangement of groups of attributes.

The Examiner further cited col. 6, line 14 and col. 24, line 12 of Lagueux with respect to the claim requirements. (Final Office Action, pgs. 3-4) The cited col. 6 mentions that a server may have application specific processors and the cited col. 24 mentions that a user launches a storage manager routine that displays an image of storage elements. FIG. 22 shows a hierarchical display of storage elements, such as the storage capacity of different storage elements, such as LUNs, disks, etc. Although the cited

Lagueux discusses displaying a hierarchical view of storage elements and devices, nowhere does the cited Lagueux anywhere disclose or mention extending a file system in a SAN with a hierarchically defined file extension policy. The display of hierarchically arranged storage elements such as in the cited FIG. 22 is different from and does not disclose the claimed hierarchically defined extension policy indicating a hierarchical arrangement of groups of attributes for configuring the extension of the file system, wherein digital data processors are associated with at least one group of attributes.

In the Response to Arguments the Examiner again cited cols. 21-22, discussed above. (Final Office Action, pg. 23) Again, although the cited cols. 21-22 discuss how storage devices may be configured for server access, nowhere is there any mention or disclosure of a hierarchically defined file extension policy as claimed.

Accordingly, amended claim 1 is patentable over the cited art because the cited Lagueux does not disclose all the claim requirements.

Independent claims 16 and 29 include the above distinguishing requirements of claim 1 in method and computer readable medium forms. The Examiner cited the above discussed sections of Lagueux with respect to these claims. (Final Office Action, pgs. 6-7, and 17-18) Claims 16 and 29 further recite assigning the digital data processors to the groups of attributes in the hierarchically defined file extension policy. Applicants submit that the cited tree view display of storage devices in the cited Lagueux does not disclose this requirement.

With respect to claim 16, which include the same additional requirements as claim 29, the Examiner cited additional sections of Lagueux , including col. 6, lines 57-58 and col. 7, lines 20-30. (Final Office Action, pgs. 7-8). The cited col. 6 discusses

software modules to support configuration, diagnostics, performance monitoring, and health and status monitoring in a SAN. The cited col. 7 discusses a management interface for managing an ISAN server. The management interface contains rule based management of the system including scheduling, process orchestration, handling processes and events, etc. One module provides rules for configuring and maintaining the ISAN server.

Although the cited cols. 6 and 7 discuss the configuration and monitoring of the systems in a SAN, such as the ISAN server, these additionally cited sections of Lagueux do not disclose using a hierarchical arrangement of groups of attributes to add storage to extend a file system.

Claim 6 is patentable over the cited art because it depends from claim 1, which is patentable over the cited art for the reasons discussed above.

For the above reasons, Applicants request reversal of the rejection of claims 1, 6, 16, and 29 because the cited art does not disclose all the requirements of these claims.

2. Claims 2, 21, and 31

Claims 2, 21, and 31 depend from claims 1, 16, and 29, respectively, and further require that the groups of attributes include a first group at a first hierarchical level and a second group at a second hierarchical level, wherein the first hierarchical level is hierarchically above the second hierarchical level, and wherein the requesting digital data processor is in the first and second groups, and wherein the first group includes at least one digital data processor other than the requesting digital data processor.

The Examiner cited col. 24, line 12 of Lagueux as disclosing the requirements of claim 2. (Final Office Action, pg. 4) Applicants traverse.

The cited col. 24 discusses a tree display of storage elements, such as showing a storage device, and then showing partitions of the storage element as child nodes. As discussed, the cited display in FIG. 22 of Lagueux of storage elements is different from and does not disclose hierarchical groupings of attributes used to extend a file system by adding storage space. The cited col. 24 discusses a display of storage elements in a hierarchical tree. Nowhere is there any disclosure of a hierarchical grouping of attributes to extend a file system as claimed.

Further, nowhere does the cited col. 24 disclose the additional requirements of claim 2 concerning how the digital data processors may be associated with different groups of attributes at hierarchical levels used to configure file system extensions. Yet further, the Examiner has not cited where Lagueux discloses that one group of attributes is associated with multiple digital data processors. Instead, the cited hierarchical display of Lagueux shows a hierarchical display of storage elements and details of each storage element as child nodes in the hierarchy.

With respect to claims 21 and 31, which include the same additional requirements as claim 2, the Examiner cited additional sections of Lagueux cited above with respect to the independent claims. (Final Office Action, pgs. 12 and 19). However, as discussed above, the cited sections of Lagueux do not disclose using a hierarchical arrangement of groups of attributes to add storage to extend a file system. Further, these cited sections of Lagueux would not disclose the additional requirements of claims 2, 21, and 31 which

provide further details on the groups of attributes at different hierarchical levels in the hierarchical arrangement of groups of attributes.

Accordingly, claims 2, 21, and 31 provide additional grounds of patentability over the cited art because the cited art does not disclose the additional requirements of this claim provide additional grounds of patentability over the cited art. In addition, these claims are patentable over the cited art for depending from claims 1, 16, and 29, which are patentable over the cited art for the reasons discussed..

For the above reasons, Applicants request reversal of the rejection of claims 2, 21, and 31 because the cited art does not disclose all the requirements of these claims.

3. Claims 3 and 25

Claims 3 and 25 depend from claims 2 and 21, respectively, and further require that the first group is associated with a first set of file extension configuration attributes defining a default policy for digital data processors associated with that group and wherein the second group is associated with a second set of one or more file extension configuration attributes, wherein a definition of an attribute in the second set overrides a definition for that attribute in the first set, wherein the configuration attributes of the second set, taken in conjunction with non-overridden configuration attributes of the first set, define a policy for the second group. The process configures the file extension on behalf of the requesting digital data processor using the attributes defined for the second group.

The Examiner cited col. 7, lines 20-30 of Lagueux as disclosing the requirements of claim 3. (Final Office Action, pgs. 4-5 and 14) Applicants traverse.

The cited col. 7 discusses a management interface for managing an ISAN server. The management interface contains rule based management of the system including scheduling, process orchestration, handling processes and events, etc. One module provides rules for configuring and maintaining the ISAN server.

Although the cited col. 7 discusses rules for configuring the ISAN server, nowhere does the cited col. 7 anywhere disclose the claim requirements concerning a hierarchical file extension policy including a first group of configuration attributes defining a default policy for digital data processors associated with that group and a second group having a second set of one or more file extension configuration attributes. Nowhere does the cited col. 7 anywhere disclose or mention the claimed details of a hierarchical file extension policy providing attributes used to configure a requested file extension for a digital data processor. Instead, the cited col. 7 discusses managing a server and rules based management of the server.

The Examiner states that the cited rules of Lagueux are “equivalent to the claimed policies”. (Final Office Action, pg. 5) Applicants traverse.

The cited col. 7 discusses rules for configuring an ISAN server. Nowhere does the cited col. 7 disclose or mention that these rules for configuring an ISAN server comprise the claimed groups of hierarchically arranged file extension attributes, where a first group defines a default policy and the second group is associated with a second set of file extension configuration attributes. Instead, the cited col. 7 describes rules used for scheduling, processor orchestration, monitoring the system, informed consent management, handling system processes and events, and suggestions for configuring and

maintaining the ISAN server. The cited rules of col. 7 do not disclose the claimed hierarchical groups of file extension policies.

With respect to claims 25, which includes the same additional requirements as claim 2, the Examiner cited additional sections of Lagueux cited above with respect to the independent claims. (Final Office Action, pg. 14). However, as discussed above, the cited sections of Lagueux do not disclose using a hierarchical arrangement of groups of attributes to add storage to extend a file system. Further, these cited sections of Lagueux would not disclose the additional requirements of claim 25 which provide further details on the groups of attributes at different hierarchical levels in the hierarchical arrangement of groups of attributes.

Accordingly, claims 3 and 25 provide additional grounds of patentability over the cited art because the cited art does not disclose the additional requirements of this claim provide additional grounds of patentability over the cited art. In addition, these claims are patentable over the cited art for depending from claims 1 and 16, which are patentable over the cited art for the reasons discussed.

For the above reasons, Applicants request reversal of the rejection of claims 3 and 25.

4. Claims 4, 18, and 30

Claims 4, 18, and 30 depend from claims 2, 17, and 29, respectively, and further require that the attributes are a member of the set of attributes comprising a utilization threshold above which file system extension is requested, one or more storage devices accessible for file system extension, a range of storage capacities for accessible storage devices to be assigned for file system extension, maximum file system size, a flag

indicating whether file system utilization is monitored, and an alert interval for notifying a SAN administrator of a file system utilization exceeding a threshold since a previous notification.

The Examiner cited col. 6, lines 57-58 and col. 8, line 51 to col. 9, line 2 of Lagueux as disclosing the additional requirements of these claims. (Final Office Action, pgs. 5-6, 8-9, 18-19) Applicants traverse.

The cited col. 6 discusses software modules to support configuration, diagnostics, performance monitoring, and health and status monitoring in a SAN. The cited cols. 8-9 discuss storage routing such that the ISAN server can be added to the SAN between a server and storage to provide new functionality. The ISAN server acts as a storage router for storage transactions, and can direct backups and archiving. The ISAN server can migrate data to a new array when a new drive or large storage is added.

Although the cited cols. 8-9 discuss how an ISAN server can migrate data in a new array brought into the network, nowhere do the cited cols. 8-9 disclose the specific claimed attributes used to configure storage added to extend a file system, where the attributes have a hierarchical arrangement. Further, nowhere do the cited cols. 6, 7, and 8 disclose a hierarchical grouping of attributes comprising a utilization threshold above which file system extension is requested, one or more storage devices accessible for file system extension, a range of storage capacities for accessible storage devices to be assigned for file system extension, maximum file system size, a flag indicating whether file system utilization is monitored, and an alert interval for notifying a SAN administrator of a file system utilization exceeding a threshold since a previous notification.

The Examiner again cited col. 24, line 12 of Lagueux which discusses a hierarchical tree of storage elements. However, as discussed, this cited hierarchical tree is of storage devices and their arrangement. Nowhere, does the cited col. 24 disclose the specific claimed attributes that are hierarchically arranged.

The cited col. 21, line 60 to col. 22, line 20 discusses providing a single coordination point for the configuration of server access, so little or no hardware configuration is necessary in adding new devices or changing management of executing devices. Further, multiple arrays can be concatenated into a single storage object. Nowhere, do the cited cols. 21-22 disclose the specific claimed attributes that are hierarchically arranged.

Accordingly, claims 4, 18, and 30 provide additional grounds of patentability over the cited art because the cited art does not disclose the additional requirements of this claim provide additional grounds of patentability over the cited art. In addition, these claims are patentable over the cited art for depending from claims 1, 16, and 29, which are patentable over the cited art for the reasons discussed.

For the above reasons, Applicants request reversal of the rejection of claims 4, 18, and 30.

5. Claims 19 and 20

Claim 19 depends from claim 21 and further requires that assigning the digital data processors to the groups further comprises assigning one of the digital data processors to the first group and to a third group hierarchically related to the second

group at a lower level, the third group inheriting at least a portion of the policy defined for the second group and overriding the remainder of the policy.

The Examiner cited col. 7, lines 50-52 as disclosing these requirements. (Final Office Action, pg. 9) Applicants traverse.

The cited col. 7 mentions that a LUN specifies a subcomponent of the target ID, and that in a combined enclosure the two devices might share an ID but have different LUNs. Nowhere does the cited col. 7 anywhere disclose or mention assigning one of the digital data processors to the first group and to a third group hierarchically related to the second group at a lower level. There is no mention assigning digital data processors to two groups, hierarchically related. Further, nowhere does the cited col. 7 anywhere disclose or mention the claim requirement of a third group of attributes inheriting at least a portion of the policy defined for the second group and overriding the remainder of the policy. Instead, the cited col. 7 mentions that two devices having different LUNs may share a target ID.

The Examiner further cited cols. 8, 9, 21, 22, and 24 of Lagueux as teaching a hierarchical structure. (Final Office Action, pg. 9) However, as discussed, Lagueux discusses a hierarchical tree view of storage elements, not a hierarchical arrangement of groups of attributes, where a group lower in the hierarchy inherits a portion of a higher group for the purposes of extending a file system.

Claim 20 depends from claim 21 and further requires assigning the digital data processors to the groups further comprises assigning another one of the digital data processors to the first group and to a third group hierarchically at the same level as the second group, the third group inheriting at least a portion of the policy defined for the

first group and overriding the remainder of the policy to define a file extension policy that is at least partially different from the policy defined for the second group.

Claim 20 is similar to claim 19, except that it requires that the second and third groups are at a same level, whereas claim 19 has the third group is related to the second group at a lower level. Claim 20 further recites that the third group inherits at least a portion of the policy defined for the first group. The cited hierarchical display of storage elements of Lagueux does not disclose the claimed hierarchical arrangement of groups of attributes used to extend storage for a file system.

Claims 19 and 20 provide additional grounds of patentability over the cited art because the cited art does not disclose the additional requirements of this claim provide additional grounds of patentability over the cited art. In addition, these claims are patentable over the cited art for depending from claims 1 and 16, which are patentable over the cited art for the reasons discussed.

For the above reasons, Applicants request reversal of the rejection of claims 19 and 20.

6. Claims 22, 26, and 32

Claims 22, 26, and 32 depend from claims 16, 1, and 29, respectively, and further require that digital data processors associated with one group of attributes are also associated with all groups of attributes at hierarchically higher levels than the group with which the digital data processor is associated.

The Examiner cited col. 7, lines 50-52, col. 8, line 51 to col. 9, line 20, col. 24, line 12, and col. 21, line 60 to col. 22, line 20 of Lagueux as teaching the additional

requirements of these claims. (Final Office Action, pgs. 12, 14-15, and 20-21) These sections were discussed above. Above, Applicants noted that the cited Lagueux nowhere discloses a hierarchically defined file extension policy of a hierarchical arrangement of groups of attributes used to add storage to extend a file system. Further, nowhere does the cited Lagueux anywhere disclose the additional detail of the claimed hierarchical arrangement that digital data processors associated with one group of attributes are also associated with all group of attributes at hierarchically higher levels. Further, the cited hierarchical tree of Lagueux displays storage devices with further information on the storage devices displayed at child nodes to the storage devices. There is no disclosure in the cited Lagueux of associating processors with different groups of file extension policy attributes arranged hierarchically.

Accordingly, claims 22, 26, and 32 provide additional grounds of patentability over the cited art in addition to being patentable over the cited art for depending from claims 16, 1, and 29, respectively, which are patentable over the cited art for the reasons discussed.

For the above reasons, Applicants request reversal of the rejection of claims 22, 26, and 32.

7. Claims 23, 27, and 33

Claims 23, 27, and 33 depend from claims 22, 26, and 32 and further require that the attributes the process uses to configure the file extension for the requesting digital processor include attributes in the at least one group associated with the requesting digital

processor, wherein a definition of one attribute at a lower hierarchical level is used over a definition of the attribute at one higher hierarchical levels.

The Examiner cited the rules of Lagueux on col. 7, lines 20-30 as teaching the claimed file extension policies. (Final Office Action, pg. 13, 15-16, 21-22)

The cited col. 7 discusses a management interface for managing an ISAN server. The management interface contains rule based management of the system including scheduling, process orchestration, handling processes and events, etc. One module provides rules for configuring and maintaining the ISAN server.

Although the cited col. 7 discusses rules for configuring the ISAN server, nowhere does the cited col. 7 anywhere disclose that the attributes used to configure the file extension include attributes in at least one group associated with the requesting digital processor and that a definition of one attribute at a lower hierarchical level is used over a definition of the attribute at one higher hierarchical level.

The above discussed and cited col. 24 and cols. 21-22, which discuss hierarchically distributed storage elements and single coordination point for configuration of server access to storage also do not disclose that attributes of a group associated with the requesting digital processor are used to configure a file extension policy, and that an attribute at a lower level is used over a definition of the attribute at one higher hierarchical level. In the cited Lagueux, the hierarchy shows storage elements and details of the storage, not attributes to extend a file system as claimed.

With respect to claims 27 and 33, which include the same additional requirements as claim 23, the Examiner cited col. 8, line 51 to col. 9, line 20 of Lagueux. (Final Office Action, pgs. 13 and 19). Although the cited cols. 8-9 discuss how an ISAN server can

migrate data in a new array brought into the network, nowhere do the cited cols. 8-9 anywhere disclose that the attributes used to configure the file extension include attributes in at least one group associated with the requesting digital processor and that a definition of one attribute at a lower hierarchical level is used over a definition of the attribute at one higher hierarchical level.

Accordingly, claims 23, 27, and 33 provide additional grounds of patentability over the cited art in addition to being patentable over the cited art for depending from claims 16, 1, and 29, respectively, which are patentable over the cited art for the reasons discussed.

For the above reasons, Applicants request reversal of the rejection of claims 23, 27, and 33.

8. Claims 24, 28, and 34

Claims 24, 28, and 34 depend from claims 16, 1, and 29, respectively, and further require that at least one group comprises a host group policy defining attributes for configuring an extension to all file systems within each digital data processor associated with the host group policy, and wherein at least one group comprises a file system policy defining attributes for configuring a specified file system within each digital data processor associated with the file system policy.

The Examiner cited the above discussed cols. 7, 24, and 21-22, which discuss rules for configuring an ISAN server and a hierarchical display of storage elements. (Final Office Action, pg. 13, 16-17, 22) Nowhere in these cited sections of Lagueux is there any disclosure or mention of a host group policy defining attributes for configuring an extension and that one group comprises a file system policy defining attributes for

configuring a specified file system within each digital data processor associated with the file system policy. There is no mention in the cited Lagueux of the claimed file extension configuration policies. Instead, the cited Lagueux, such as FIG. 22, mentions a hierarchical display of storage devices, not a hierarchical display of attributes used to configure an extension of a file system, and that one policy defines attributes for configuring a specified file system within each data processor.

With respect to claim 28, which includes the same additional requirements as claims 24 and 34, the Examiner cited col. 8, line 51 to col. 9, line 20 of Lagueux. (Final Office Action, pg. 17). Although the cited cols. 8-9 discuss how an ISAN server can migrate data in a new array brought into the network, nowhere do the cited cols. 8-9 anywhere disclose or mention the claim requirements of a host group policy defining attributes for configuring an extension and that one group comprises a file system policy defining attributes for configuring a specified file system within each digital data processor associated with the file system policy

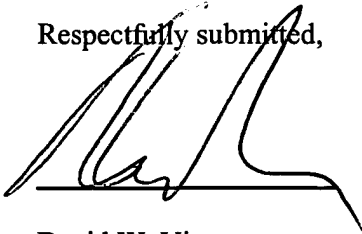
Accordingly, claims 24, 28, and 34 provide additional grounds of patentability over the cited art in addition to being patentable over the cited art for depending from claims 16, 1, and 29, respectively, which are patentable over the cited art for the reasons discussed.

For the above reasons, Applicants request reversal of the rejection of claims 24, 28, and 34.

9. Conclusion

Each of the rejections set forth in the Final Office Action is improper and should be reversed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'David W. Victor', written over a horizontal line.

David W. Victor
Reg. No. 39,867
Konrad Raynes & Victor LLP
315 South Beverly Drive, Ste. 210
Beverly Hills, California 90212
Tel: 310-553-7977
Fax: 310-556-7984

Dated: February 17, 2006

VIII. Claims Appendix

1. (Previously Presented) A storage area network (SAN), comprising:
a plurality of storage devices;
a plurality of digital data processors, each having a file system that effects access to one or more of the storage devices coupled to the SAN; and
a process in communication with the digital data processors, wherein the process responds to a notification from one of the digital data processors requesting extension of the file system at the requesting digital data processor in accordance with a hierarchically defined file extension policy, wherein the hierarchically defined extension policy indicates a hierarchical arrangement of groups of attributes for configuring the extension of the file system, and wherein the process adds storage to the file system of the requesting digital processor to implement the request for the extension of the file system according to the attributes in the at least one group of attributes associated with the requesting digital data processor.
2. (Previously Presented) The SAN of claim 1, wherein the groups of attributes include a first group at a first hierarchical level and a second group at a second hierarchical level, wherein the first hierarchical level is hierarchically above the second hierarchical level, and wherein the requesting digital data processor is associated with the first and second groups, and wherein the first group is further associated with at least one digital data processor other than the requesting digital data processor.

3. (Previously Presented) The SAN of claim 2, wherein

the first group is associated with a first set of file extension attributes defining a default policy for digital data processors associated with that group and wherein the second group is associated with a second set of one or more file extension configuration attributes, wherein a definition of an attribute in the second set overrides a definition for that attribute in the first set, wherein the configuration attributes of the second set, taken in conjunction with non-overridden configuration attributes of the first set, define a policy for the second group, wherein the process configures the file extension on behalf of the requesting digital data processor using the attributes in the policy defined for the second group.

4. (Previously Presented) The SAN of claim 2, wherein the attributes are a

member of a set of configuration attributes comprising: a utilization threshold above which file system extension is requested, one or more storage devices accessible for file system extension, a range of storage capacities for accessible storage devices to be assigned for file system extension, maximum file system size, a flag indicating whether file system utilization is monitored, and an alert interval for notifying a SAN administrator of a file system utilization exceeding a threshold since a previous notification.

5. (Canceled)

6. (Previously Presented) The SAN of claim 2, wherein a database coupled to the process stores the hierarchical arrangement of the groups of attributes.

7-15. (Canceled)

16. (Previously Presented) A method operating in a storage area network (SAN) comprising one or more digital data processors and one or more storage devices, each having a file system that effects access to one or more of the storage devices, comprising:

defining a hierarchically defined file extension policy, wherein the hierarchically defined extension policy indicates a hierarchical arrangement of groups of attributes for configuring an extension of the file system;

assigning the digital data processors to the groups of attributes;

extending the file system of a digital data processor requesting an extension of the file system by adding storage to the file system of the requesting digital data processor according to the attributes in the at least one group of attributes associated with the requesting digital data processor.

17. (Canceled)

18. (Previously Presented) The method of claim 17, wherein the attributes are a member of a set of attributes comprising: a utilization threshold above which file system extension is requested, one or more storage devices accessible for file system

extension, a range of storage capacities for accessible storage devices to be assigned for file system extension, maximum file system size, a flag indicating whether file system utilization is monitored, and an alert interval for notifying a SAN administrator of a file system utilization exceeding a threshold since a previous notification.

19. (Previously Presented) The method of claim 21, wherein assigning the digital data processors to the groups further comprises assigning one of the digital data processors to the first group and to a third group hierarchically related to the second group at a lower level, the third group inheriting at least a portion of the policy defined for the second group and overriding the remainder of the policy.

20. (Previously Presented) The method of claim 21, wherein assigning the digital data processors to the groups further comprises assigning another one of the digital data processors to the first group and to a third group hierarchically at the same level as the second group, the third group inheriting at least a portion of the policy defined for the first group and overriding the remainder of the policy to define a file extension policy that is at least partially different from the policy defined for the second group.

21. (Previously Presented) The method of claim 16, wherein the groups of attributes include

a first group at a first hierarchical level and a second group at a second hierarchical level, wherein the first hierarchical level is hierarchically above the second

hierarchical level, and wherein the requesting digital data processor is in the first and second groups, and wherein the first group includes at least one digital data processor other than the requesting digital data processor.

22. (Previously Presented) The method of claim 16, wherein digital data processors associated with one group of attributes are also associated with all groups of attributes at hierarchically higher levels than the group with which the digital data processor is associated.

23. (Previously Presented) The method of claim 22, wherein the attributes the process uses to configure the file extension for the requesting digital processor include attributes in the at least one group associated with the requesting digital processor, wherein a definition of one attribute at a lower hierarchical level is used over a definition of the attribute at one higher hierarchical levels.

24. (Previously Presented) The method of claim 16, wherein at least one group comprises a host group policy defining attributes for configuring an extension to all file systems within each digital data processor associated with the host group policy, and wherein at least one group comprises a file system policy defining attributes for configuring a specified file system within each digital data processor associated with the file system policy.

25. (Previously Presented) The method of claim 21, wherein the first group is associated with a first set of file extension attributes defining a default policy for digital data processors associated with that group and wherein the second group is associated with a second set of one or more file extension configuration attributes, wherein a definition of an attribute in the second set overrides a definition for that attribute in the first set, wherein the configuration attributes of the second set, taken in conjunction with non-overridden configuration attributes of the first set, define a policy for the second group, wherein the process configures the file extension on behalf of the requesting digital data processor using the attributes defined for the policy of the second group.

26. (Previously Presented) The SAN of claim 1, wherein digital data processors associated with one group of attributes are also associated with all groups of attributes at hierarchically higher levels than the group with which the digital data processor is associated.

27. (Previously Presented) The SAN of claim 26, wherein the attributes the process uses to configure the file extension for the requesting digital processor include attributes in at least one group associated with the requesting digital processor, wherein a definition of one attribute at a lower hierarchical level is used over a definition of the attribute at one higher hierarchical levels.

28. (Previously Presented) The SAN of claim 1, wherein at least one group comprises a host group policy defining attributes for configuring an extension to all file

systems within each digital data processor associated with the host group policy, and wherein at least one group comprises a file system policy defining attributes for configuring a specified file system within each digital data processor associated with the file system policy.

29. (Previously Presented) A computer readable medium including a manager program in communication with one or more digital data processors and one or more storage devices, each having a file system that effects access to one or more of the storage devices, wherein the manager program is capable of causing operations, the operations comprising:

defining a hierarchically defined file extension policy, wherein the hierarchically defined extension policy indicates a hierarchical arrangement of groups of attributes for configuring an extension of the file system;

assigning the digital data processors to the groups of attributes; and

extending the file system of a digital data processor requesting an extension of the file system by adding storage to the file system of the requesting digital data processor according to the attributes in the group of attributes associated with the requesting digital data processor.

30. (Previously Presented) The computer readable medium of claim 29, wherein the attributes are a member of a set of attributes comprising: a utilization threshold above which file system extension is requested, one or more storage devices accessible for file system extension, a range of storage capacities for accessible storage

devices to be assigned for file system extension, maximum file system size, a flag indicating whether file system utilization is monitored, and an alert interval for notifying a SAN administrator of a file system utilization exceeding a threshold since a previous notification.

31. (Previously Presented) The computer readable medium of claim 29, wherein the groups of attributes include:

a first group at a first hierarchical level and a second group at a second hierarchical level, wherein the first hierarchical level is hierarchically above the second hierarchical level, and wherein the requesting digital data processor is in the first and second groups, and wherein the first group includes at least one digital data processor other than the requesting digital data processor.

32. (Previously Presented) The computer readable medium of claim 29, wherein digital data processors associated with one group of attributes are also associated with all groups of attributes at hierarchically higher levels than the group with which the digital data processor is associated.

33. (Previously Presented) The computer readable medium of claim 33, wherein the attributes the process uses to configure the file extension for the requesting digital processor include attributes in the at least one group associated with the requesting digital processor, wherein a definition of one attribute at a lower hierarchical level is used over a definition of the attribute at one higher hierarchical levels.

34. (Previously Presented) The computer readable medium of claim 29, wherein at least one group comprises a host group policy defining attributes for configuring an extension to all file systems within each digital data processor associated with the host group policy, and wherein at least one group comprises a file system policy defining attributes for configuring a specified file system within each digital data processor associated with the file system policy.

IX. Evidence Appendix

None

X. Related Proceedings Appendix

None